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(54) **DIE COATER FOR APPLYING DISCRETE COATING PATCHES.**

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Description

The present invention relates to coating apparatus. More particularly, the present invention relates to coating apparatus which can be used to coat spaced portions of a substrate. Such an apparatus is known from document US-A-3 595 204.

Coating a fluid solution onto a web of material is well known. It is also known to coat a fluid onto a web in a series of discrete patches. In one well known system, a gravure coating process using a roll coater can be used. However, while this produces clean front and rear patch edges, the cell pattern is visible in the overall appearance, causing the patch to be optically unclear which is undesirable.

In document US-A-3,973,961, photoconductor patches are coated onto carrier webs. A main pump provides the major supply of fluid to the die and recycle line. Excess flow is supplied to the die to obtain transversely uniform flow of fluid through the die to the web. Two dosing pumps, one upstream and the other downstream of the die, complement the main pump by adding controlled oversupply and retraction of fluid in the die for starts and stops, respectively, of the coating process. However, with this system, nonuniform light areas of coating occur on the front and back portions of the coated patch. Moreover, the coating weight increases over the front portion of the patch before decreasing toward the back portion of the patch. These unacceptable variations require additional complex control equipment.

US-A-4,938,994 and a promotional brochure entitled "Inca - 2000 Patch Coater" disclose an apparatus for patch coating incremental substrates. The substrate speed can range from 0.30 - 7.62 m/min (1 - 25 ft/min). During operation, the coating fluid is fed through applicator lips without continuously circulating.

The present invention overcomes the nonuniformity problems of known patch coating systems and coats a pattern of plural uniform spaced discrete coating patches on a single web of material. The apparatus includes an extrusion die, a metering pump which supplies coating fluid to the extrusion die from a fluid reservoir, and a three-way, high speed spool valve which directs fluid to either the extrusion die or the fluid reservoir. The coating fluid is continuously being transported from the reservoir to the valve which directs coating fluid to the die when patches are being coated and directs coating fluid back to the reservoir in between the coating of patches.

A piston moves toward the solution to force the solution toward and through the extrusion die to provide a controlled excess flow of coating fluid to the extrusion die. This provides clean front edges of coating patches by quickly beginning the application of coating onto the web to quickly establish the coating bead of the solution. The piston moves away from the solution to pull solution into the piston cylinder to suck solution backward into the die. This provides a sharp break at the coating bead in the coating fluid flowing through the extrusion die to provide clean rear edges of coating to quickly end the coating bead of the solution.

A controller controls the operation of the valve and the piston. The controller controls the length of the coated portions of the web of material, the distance between the coated portions of the web of material, and coordinates the relative timing of the valve with respect to the operation of the piston. The controller includes a start counter which regulates the beginning of coating and an end counter which regulates the ending of coating. Each counter is adjustable to independently regulate the operation of both the valve and the piston. The controller can cause the movement of the piston to precede, follow, or occur simultaneously with the switching of the valve. The relative timing of operation between the valve and the piston is selected in combination with the various properties and conditions of coating.

Figure 1 is a schematic view of the coating apparatus according to the present invention.

The coating apparatus 10 coats a pattern of spaced discrete coating patches 12 on a web 14 of material as the web 14 passes around a backup roller 16. The apparatus 10 includes an extrusion die 18 capable of producing uniform coatings having a thickness of 0.025 mm (0.001 in) or less, as well as thicker coatings. Known extrusion dies meeting this requirement can be used. A gear type metering pump 20 accurately supplies coating fluid such as a solution 22 to the extrusion die 18 from a fluid reservoir 24 and an air operated three-way, high speed spool valve 26 directs solution 22 to either the extrusion die 18 or the reservoir 24. Spool valves are preferred as they do not displace the coating when the spool shuttles back and forth. An air operated piston 28 displaces the coating without any displacement caused by the spool valve 26. Alternatively, the piston 28 can be mechanical or hydraulic. Solution 22 is constantly being pumped from the reservoir 24 through the spool valve 26. In one position of the valve 26, the solution 22 passes to the extrusion die 18 to coat patches 12 on the web 14. In the other valve position, the solution 22 returns to the reservoir 24.

Clean front edges 30 and rear edges 32 of the coating patches 12 are produced by quickly establishing and ending, respectively, the coating bead of the solution 22. This is accomplished by cooperatively operating the valve 26 and the piston 28. When coating of the web 14 is to begin, the valve

26 causes solution 22 to proceed to the extrusion die 18 while the piston 28 moves within its cylinder 34 toward the solution 22 in the coating line 36 to force the solution 22 toward and through the extrusion die 18 to provide a controlled excess flow of solution 22 to the extrusion die 18. The solution 22 is simultaneously distributed across the full width of the die 18 to bridge the coating gap. With this apparatus 10, coating has been performed at speeds of up to 103.6 m/min (340 ft/min). Clean front and rear edges 30, 32 have been attained at speeds over 61.0 m/min (200 ft/min). After coating has begun, the solution 22 is extruded onto the web 14 at a lower constant rate as determined by the pump 20. The amount of coating applied per coating patch 12 can be adjusted by adjusting the volume displaced by the pump 20.

When coating of the web 14 is to end, the valve 26 causes solution 22 to proceed back to the reservoir 24. At approximately the same time, the piston 28 moves within its cylinder 34 away from the solution 22 in the coating line 36. This pulls solution 22 into the piston cylinder 34, sucks solution 22 back into the die 18, and provides a sharp break in the solution 22 flowing through the extrusion die 18. As discussed below, the relative timing of the piston 28 and the valve 26 are coordinated and need not be simultaneous.

A controller 38, which includes an electronic control package, controls the operation and coordinates the timing of the valve 26 and the piston 28 to control the length of the coated patches 12 of the web 14 and the distance between the coated patches 12 on the web 14 within the limits set by the timing marks 56 discussed below. The movement of the piston 28 can precede the opening or closing of the valve 26, can follow the opening or closing of the valve 26, or can operate simultaneously with the opening or closing of the valve 26. This enables the clean, precise, uniform front and rear edges 30, 32 of the coating patches 12 to be fine tuned. Time variations between the operation of the valve 26 and piston 28 typically are on the order of milliseconds. Additionally, the piston stroke can be varied to change the effective volume of solution 22. This can further enhance adjustment of the clean front and rear edges 30, 32 of the coating patches 12 by accommodating different coating parameters such as viscosity, web speed, and coating thickness.

The controller 38, which is a conventional off-the-shelf controller, includes two high speed counters 40, 42 and an encoder 44. The counters 40, 42 regulate the beginning and ending of the coating of solution 22 onto the web 14 to form the coating patch 12. The start counter 40 regulates the beginning of coating while the end counter 42 regulates the ending of coating. The start counter 40 has two adjustable settings 46, 48 which are dimensionless numbers and are manually adjusted, as by a dial or thumbwheels, to govern the beginning operation of the valve and the piston, respectively. The end counter 42 has two adjustable settings 50, 52 which are dimensionless numbers and are manually adjusted, as by a dial or thumbwheels, to govern the ending operation of the valve and the piston, respectively. One setting 46, 50 regulates the timing of the valve 26 and the other setting 48, 52 regulates the timing of the piston 28. If both settings 46, 48 or 50, 52 on one counter are set at the same number the valve 26 and piston 28 act simultaneously. If one setting is set at a lower number, the respective valve 26 or piston 28 acts first. These settings are selected in combination with the various properties and conditions of coating including the fluid density, the web material and coating thickness, and the web speed. Generally, the web speed has been found to have the greatest effect on the adjustment of the piston. As the web speed increases, a larger piston displacement is required to achieve clean front and rear edges 30, 32.

The encoder 44 is driven by the web movement around the backup roller 16 although the encoder 44 can alternately be driven off of a nip roller. The encoder 44 sends a predetermined number of pulses per backup roller 16 rotation to the counters 40, 42 to coordinate the coating patch 12 application. A fiberoptic sensor 54 reads timing marks 56 on the web 14. When a timing mark 56 is encountered, the sensor 54 signals the start counter 40 to begin counting. When the start counter 40 reaches the preset number for the valve 26, the valve 26 diverts solution 22 to the extrusion die 18. When the preset start number for the piston 28 is reached the piston 28 moves within the cylinder 34 toward the solution 22 to provide a burst, a controlled excess flow, of solution 22 to the die 18 to quickly begin coating and provide a clean front edge.

The length of the coating patch 12 on the web 14 is determined by the preset numbers on the end counter dials 42 (in conjunction with the preset numbers on the start counter dials 40). When the end counter 42 reaches the preset number for the valve 26, the valve 26 diverts solution 22 back to the reservoir 24. When the preset end number for the piston 28 is reached the piston 28 moves within its cylinder 34 away from the solution 22 to pull the solution 22 into the cylinder 34 to cause a quick cessation of solution 22 out of the die 18 and provide a clean rear edge. After coating stops, the counters 40, 42 automatically reset to zero in preparation for coating the next patch 12. The beginning of the next patch 12 can be triggered by another timing mark 56 on the web 14, by pre-

viously coated patches 12, or by other known systems. Thus, the spacing between or overlap of adjacent patches 12 can be accurately and precisely controlled.

This apparatus 10 produces highly uniform and defect free coating patches 12 in varying lengths. The width of the patches 12 depends on the coating die 18 width. A single wide die 18 with removable shims can be used to vary the coating patch 12 width. Using a plurality of apparatus 10, each coating with solutions 22 of different color, alternating patches 12 of different color can be produced on the web 14. Typically, patches 12 of yellow, magenta, cyan, and black are used on webs 14 of 6 micron thick polyethylene teraphthalate.

A method of coating a pattern of spaced coating patches 12 on the web of material 14 includes the following steps. First the coating solution 22 is pumped from the reservoir 24 to the spool valve 26. The valve 26 directs solution 22 to either the extrusion die 18 or the fluid reservoir 24. A pulsed flow of solution 22 is provided to the extrusion die 18 from the valve 26 using the piston 28. The solution 22 is finally extruded onto the web of material 14.

This coating system using the apparatus 10 has many advantages over the commonly known roll coating method of coating patches on a web. The apparatus 10 is a closed system and is not subject to atmospheric interferences. Solvents with evaporation or drying problems when used in open pan systems can be used with the apparatus 10 more reliably and easily. As the apparatus 10 uses a noncontact die 18 there is less chance of upsets in or breaking of the web than contact systems. Over the long term, patch characteristics within individual patches and from patch to patch and web to web are more uniform as there is no wear from doctor blades. The apparatus 10 also can change patch lengths easily without storing and changing many rolls. Moreover, changing the patch length can be accomplished on the fly, and by using a dual slot die two layers can be coated. Additionally, changing the patch length, patch width, and patch position relative other patches are very easy.

Claims

1. An apparatus (10) for coating a pattern of spaced discrete patches (12) on a web (14) comprising:

   an extrusion die (18) capable of producing uniform thin coatings;

   a metering pump (20) which supplies coating fluid to the extrusion die (18);

   means for directing coating fluid to either the extrusion die (18) or a fluid reservoir (24);

   characterized by

   means adapted to provide a controlled excess flow of coating fluid to the extrusion die (18) to provide clean front edges (30) of the patches (12) and to quickly establish the coating bead;

   means adapted to provide a sharp break in the coating fluid flowing through the extrusion die (18) to provide clean rear edges (32) of the patches (12) to quickly end the coating bead; and

   means adapted to control the operation of the directing means and the two providing means to control the length of and the distance between the coated patches (12) and to coordinate the timing of the directing means with respect to the operation of the two providing means.

2. The apparatus (10) of claim 1 further comprising a reservoir (24) which supplies coating fluid through the metering pump (20), and wherein the directing means comprises a three-way, high speed spool valve (26), and wherein coating fluid is constantly being transported from the reservoir (24) to the valve (26) which directs coating fluid to the die (18) when patches (12) are being coated and directs coating fluid back to the reservoir (24) in between the coating of patches (12).

3. The apparatus (10) of claim 1 wherein both providing means comprise a single piston (28) slidably disposed within a cylinder (34), wherein the piston (28) provides a controlled excess flow of coating fluid to the extrusion die (18) by moving toward the coating fluid to force the coating fluid toward and through the extrusion die (18), and wherein the piston (28) provides a sharp break in the coating fluid flowing through the extrusion die (18) by moving away from the coating fluid to pull coating fluid into the piston cylinder (34) to suck coating fluid backward into the die (18).

4. The apparatus (10) of claim 3 wherein the controlling means comprises a start counter (40) which regulates the starting of coating, an end counter (42) which regulates the ending of coating, and means for starting the start counter (40) to begin operation, wherein each counter (40, 42) is adjustable to independently regulate the operation of both the directing means and the piston (28), and wherein the controlling means can cause the movement of the piston (28) to precede, follow, or occur simultaneously with the switching of the directing means, and wherein the relative timing of operation

between the directing means and the piston (28) is selected in combination with the various properties and conditions of coating.

5. A method of coating a pattern of a plurality of spaced discrete coating patches (12) on a single web (14) of material comprising the steps of:

providing relative movement between the web (14) of material and a coating die (18) at speeds of at least 10 m/min;

pumping coating fluid from a reservoir (24) to an extrusion die (18) at intervals corresponding to when coating is desired;

directing coating fluid to either the extrusion die (18) or the reservoir (24) depending on whether coating is desired;

characterized by the steps of

providing a controlled excess flow of coating fluid to the extrusion die (18) to provide clean front edges (30) of the coating patches (12) to quickly establish the coating bead;

providing a sharp break in the coating fluid flowing through the extrusion die (18) to provide clean rear edges (32) of the coating patches (12) to quickly end the coating bead;

extruding coating fluid onto the web (14);

controlling the length of and the distance between the coated patches (12) on the web (14); and

coordinating the timing of the directing step with respect to the operation of the two latter providing steps.

6. The method of claim 5 further comprising the step of selecting the relative timing of operation between the directing step and the two providing steps in combination with the various properties and conditions of coating.

7. The method of claim 5 wherein the extruding step comprises using a die (18), and wherein the providing step comprises moving the web (14) relative to the die (18).

8. The method of claim 5 wherein the controlling and coordinating steps comprise electronically controlling and coordinating without contacting the web (14) with mechanical switches.

Patentansprüche

1. Vorrichtung (10) zum Auftragen eines Musters aus beabstandeten, diskreten Feldern (12) auf eine Bahn (14) mit:

einer Extrusionsmatrize (18), die einen gleichmäßig dünnen Auftrag erzeugen kann;

einer Zuteilpumpe (20), die der Extrusionsmatrize (18) Auftrageflüssigkeit zuführt;

einer Einrichtung zum Zuleiten von Auftrageflüssigkeit entweder zu der Extrusionsmatrize (18) oder einem Flüssigkeitsbehälter (24);

gekennzeichnet durch

eine Einrichtung, die zum Erzeugen eines kontrollierten Überschusses der Auftrageflüssigkeit zu der Extrusionsmatrize (18) angepaßt ist, um saubere Vorderkanten (30) der Felder (12) zu schaffen und um den Auftragewulst schnell zu bilden;

eine Einrichtung, die zum Erzeugen eines scharfen Bruchs in der durch die Extrusionsmatrize (18) fließenden Auftrageflüssigkeit angepaßt ist, um saubere Hinterkanten (32) der Felder (12) zu schaffen und um den Auftragewulst schnell zu beenden; und

eine Einrichtung, die zum Kontrollieren des Betriebs der Zuleitungseinrichtung und der beiden Erzeugungseinrichtungen angepaßt ist, um die Länge der aufgetragenen Felder (12) und den Abstand zwischen ihnen zu kontrollieren und um die zeitliche Steuerung der Zuleitungseinrichtung bezüglich des Betriebs der beiden Erzeugungseinrichtungen zu koordinieren.

2. Vorrichtung (10) nach Anspruch 1, die ferner einen Behälter (24) aufweist, der durch die Zuteilpumpe (20) Auftrageflüssigkeit zuführt, und wobei die Zuleitungseinrichtung ein Drei-Wege-Hochgeschwindigkeitssteuerventil (26) aufweist, und wobei von dem Behälter (24) fortlaufend Auftrageflüssigkeit zu dem Ventil (26) transportiert wird, das, wenn Felder (12) aufgetragen werden, Auftrageflüssigkeit zu der Matrize (18) leitet, und zwischen dem Auftragen der Felder (12) Auftrageflüssigkeit zurück zu dem Behälter (24) leitet.

3. Vorrichtung (10) nach Anspruch 1, wobei beide Erzeugungseinrichtungen einen einzigen Kolben (28) aufweisen, der innerhalb eines Zylinders (34) verschiebbar angeordnet ist, wobei der Kolben (28) einen kontrollierten Überschuß der Auftrageflüssigkeit zu der Extrusionsmatrize (18) erzeugt, indem er sich in Richtung der Auftrageflüssigkeit bewegt, um die Auftrageflüssigkeit in Richtung und durch die Extrusionsmatrize (18) zu drücken, und wobei der Kolben (28) einen scharfen Bruch in der durch die Extrusionsmatrize (18) fließenden Auftrageflüssigkeit erzeugt, indem er sich von der Auftrageflüssigkeit weg bewegt, um Auftrageflüssigkeit in den Kolbenzylinder (24) zu ziehen, was Auftrageflüssigkeit zurück zu der Matrize (18) saugt.

4. Vorrichtung (10) nach Anspruch 3, wobei die Kontrolleinrichtung eine Startzähleinrichtung (40), die den Beginn des Auftragens reguliert, eine Endzähleinrichtung (42), die das Ende des Auftragens reguliert, und eine Einrichtung zum Starten der Startzähleinrichtung (40) aufweist, um den Vorgang zu beginnen, wobei jede Zähleinrichtung (40, 42) so einstellbar ist, daß der Betrieb sowohl der Zuleitungseinrichtung als auch des Kolbens (28) unabhängig reguliert wird, und wobei die Kontrolleinrichtung bewirken kann, daß die Bewegung des Kolbens (28) dem Schalten der Zuleitungseinrichtung vorangeht, folgt oder gleichzeitig damit auftritt, und wobei die relative zeitliche Steuerung des Betriebs zwischen der Zuleitungseinrichtung und dem Kolben (28) in Verbindung mit verschiedenen Eigenschaften und Bedingungen des Auftragens ausgewählt wird.

5. Verfahren zum Auftragen eines Musters aus mehreren beabstandeten, diskreten Auftragefeldern (12) auf eine einzige Materialbahn (14), das die Schritte aufweist:

Herstellen relativer Bewegung zwischen der Materialbahn (14) und einer Auftragematrize (18) bei einer Geschwindigkeit von mindestens 10 m/min;

Pumpen der Auftrageflüssigkeit von einem Behälter (24) zu einer Extrusionsmatrize (18) in entsprechenden Intervallen, wenn Auftragen erwünscht ist;

Leiten von Auftrageflüssigkeit entweder zu der Extrusionsmatrize (18) oder dem Behälter (24), abhängig davon, ob Auftragen gewünscht ist;

gekennzeichnet durch die Schritte:

Erzeugen eines kontrollierten Überschusses der Auftrageflüssigkeit zu der Extrusionsmatrize (18), um saubere Vorderkanten (30) der Auftragefelder (12) zu erzeugen und um den Auftragewulst schnell zu bilden;

Erzeugen eines scharfen Bruchs in der durch die Extrusionsmatrize (18) fließenden Auftrageflüssigkeit, um saubere Hinterkanten (32) der Auftragefelder (12) zu erzeugen und um den Auftragewulst schnell zu beenden;

Extrudieren der Auftrageflüssigkeit auf die Bahn (14);

Kontrollieren der Länge der Auftragefelder (12) auf der Bahn (14) und des Abstands zwischen ihnen; und

Koordinieren der zeitlichen Steuerung des Zuleitungsschrittes bezüglich des Betriebs der beiden letzteren Erzeugungsschritte.

6. Verfahren nach Anspruch 5, das ferner den Schritt des Auswählens der relativen zeitlichen Steuerung des Betriebs zwischen dem Zuleitungsschritt und den beiden Erzeugungsschritten in Verbindung mit den verschiedenen Eigenschaften und Bedingungen des Auftragens aufweist.

7. Verfahren nach Anspruch 5, wobei der Extrudierschritt das Verwenden einer Matrize (18) aufweist, und wobei der Erzeugungsschritt das Bewegen der Bahn (14) relativ zu der Matrize (18) aufweist.

8. Verfahren nach Anspruch 5, wobei der Kontroll- und Koordinierschritt elektronisches Kontrollieren und Koordinieren ohne Kontakt der Bahn (14) mit mechanischen Schaltern aufweist.

Revendications

1. Appareil (10) pour l'enduction d'un motif constitué de plaques (12) séparées, espacées sur une toile (14), comportant:

une filière d'extrusion (18) capable de produire des enduits uniformes, minces;

une pompe de dosage (20) qui envoie un fluide d'enduction vers la filière d'extrusion (18);

des moyens pour diriger le fluide d'enduction vers la filière d'extrusion (18) ou vers un réservoir de fluide (24); caractérisé en ce qu'il comporte

des moyens adaptés pour fournir un écoulement excédentaire commandé de fluide d'enduction vers la filière d'extrusion (18), afin d'obtenir des bords avant nets (30) pour les plaques (12) et établir rapidement la coulée d'enduction;

des moyens adaptés pour fournir une interruption brutale du fluide d'enduction s'écoulant à travers la filière d'extrusion (18), afin d'obtenir des bords arrière nets (32) pour les plaques (12) et interrompre rapidement la coulée d'enduction; et

des moyens adaptés pour commander l'actionnement des moyens pour diriger et des deux moyens de fourniture, afin de commander la longueur des plaques enduites (12) et la distance existant entre ces dernières et pour coordonner la synchronisation des moyens pour diriger par rapport à l'actionnement des deux moyens de fourniture.

2. Appareil (10) selon la revendication 1, comportant en outre un réservoir (24) qui envoie un fluide d'enduction à travers le pompe de dosage (20), et dans lequel les moyens pour diriger comportent une vanne à tiroir (26) à trois

voies, fonctionnant à vitesse élevée, et dans lequel le fluide d'enduction est transporté de manière continue à partir du réservoir (24) vers la vanne (26) qui dirige le fluide d'enduction vers la filière (18) lorsque les plaques (12) doivent être enduites et dirige le fluide d'enduction en retour vers le réservoir (24) entre l'enduction de plaques (12).

3. Appareil (10) selon la revendication 1, dans lequel les deux moyens de fourniture comportent un piston unique (28) disposé de manière coulissante à l'intérieur d'un cylindre (34), dans lequel le piston (28) envoie un écoulement excédentaire commandé de fluide d'enduction vers la filière d'extrusion (18) en se déplacant dans la direction du fluide d'enduction pour pousser le fluide d'enduction en direction de la filière d'extrusion (18) et à travers cette dernière, et dans lequel le piston (28) fournit une interruption brutale du fluide d'enduction s'écoulant à travers la filière d'extrusion (18) en s'éloignant du fluide d'enduction afin d'entraîner le fluide d'enduction à l'intérieur du cylindre (34) de piston pour aspirer le fluide d'enduction afin que celui-ci reflue à l'intérieur de la filière (18).

4. Appareil (10) selon la revendication 3, dans lequel les moyens de commande comportent un compteur de début (40) qui régule le début de l'enduction, un compteur de fin (42) qui régule la fin de l'enduction, et des moyens pour démarrer le compteur de début (40) pour commencer à agir, dans lequel chaque compteur (40, 42) peut être ajusté pour réguler de manière indépendante l'actionnement de chacun des moyens pour diriger et du piston (28), et dans lequel les moyens de commande peuvent amener le déplacement du piston (28) à précéder, à suivre, ou à intervenir de manière simultanée avec la commutation des moyens pour diriger, et dans lequel la synchronisation relative de l'actionnement entre les moyens pour diriger et le piston (28) est choisie en combinaison avec les diverses propriétés et conditions d'enduction.

5. Procédé d'enduction d'un motif constitué de plusieurs plaques d'enduction (12) espacées, séparées, sur une toile unique (14) de matériau, comportant les étapes consistant à:

assurer un déplacement relatif entre la toile (14) de matériau et une filière d'enduction (18) à des vitesses d'au moins 10 m/min;

pomper un fluide d'enduction à partir d'un réservoir (24) vers une filière d'extrusion (18) au niveau d'intervalles correspondant à ceux où l'on désire procéder à l'enduction;

diriger le fluide d'enduction vers la filière d'extrusion (18) ou vers le réservoir (24) selon que l'enduction est désirée on ne l'est pas;

caractérisé en ce qu'il comporte les étapes consistant à

fournir un écoulement excédentaire commandé de fluide d'enduction à la filière d'extrusion (18), afin d'obtenir des bords avant (30) nets pour les plaques d'enduction (12) et établir de manière rapide la coulée d'enduction;

fournir une interruption brutale du fluide d'enduction s'écoulant à travers la filière d'extrusion (18), afin de fournir des bords arrière (32) nets pour les plaques d'enduction (12) et interrompre rapidement la coulée d'enduction;

extruder le fluide d'enduction sur la toile (14);

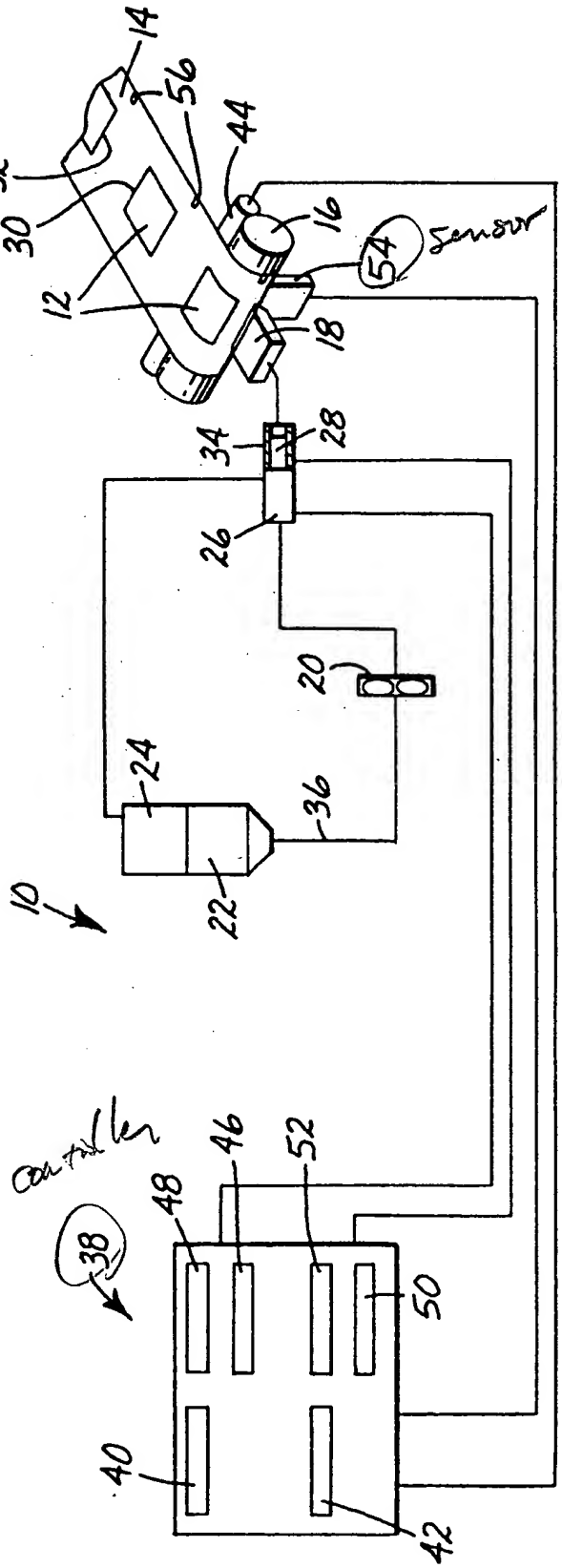
commander la longueur des plaques enduites (12) et la distance existant entre ces dernières sur la toile (14); et

coordonner la synchronisation de l'étape consistant à diriger par rapport à la mise en oeuvre des deux dernières étapes de fourniture.

6. Procédé selon la revendication 5, comportant en outre l'étape consistant à choisir la synchronisation relative d'actionnement entre l'étape consistant à diriger et les deux étapes de fourniture en combinaison avec les diverses propriétés et conditions d'enduction.

7. Procédé selon la revendication 5, dans lequel l'étape d'extrusion comporte l'utilisation d'une filière (18), et dans lequel l'étape de fourniture comporte le déplacement de la toile (14) par rapport à la filière (18).

8. Procédé selon la revendication 5, dans lequel les étapes de commande et de coordination consistent à commander et coordonner électroniquement, sans aucun contact de la toile (14) avec des commutateurs mécaniques.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Sensor
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Controller
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Fig. 1